

TI-83 Plus Calculator: Graphing Trigonometric Functions

5.5



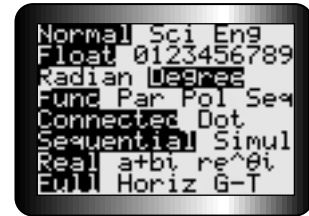
You can graph trigonometric functions in both degree measure and radian measure using the TI-83 Plus calculator.

Graphing in Degrees

Graph the function $y = \sin x$ for $0^\circ \leq x \leq 360^\circ$.

1. Put the calculator in degree mode.

Press **[MODE]**. Scroll down and across to Degree. Press **[ENTER]**.



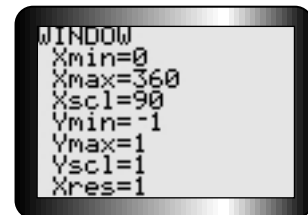
step 1

2. Enter $y = \sin x$ into the equation editor.

Press **[Y=]** **[SIN]** **[X,T,Θ,n]** **[)]**.

3. Adjust the window to correspond to the given domain.

Press **[WINDOW]**. Set Xmin=0, Xmax=360, and Xscl=90. These settings display the graph from 0° to 360° , using an interval of 90° on the x-axis. In this case, set Ymin=-1 and Ymax=1, since the sine function lies between these values. However, if this fact is not known, this step can be omitted.



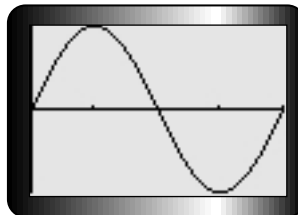
step 3

4. Graph the function using ZoomFit.

Press **[ZOOM]** **[0]**. The graph is displayed over the domain and the calculator determines the best values to use for Ymax and Ymin in the display window.



step 4

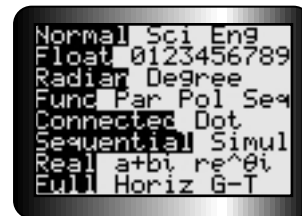


Graphing in Radians

Graph the function $y = \cos x$ for $0 \leq x \leq 2\pi$.

1. Put the calculator in radian mode.

Press **[MODE]** and scroll down to Radian. Press **[ENTER]**.



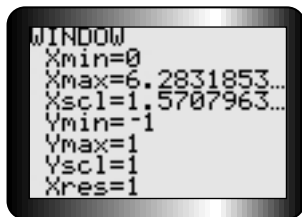
step 1

2. Enter $y = \cos x$ into the equation editor.

Press **[Y=]** **[COS]** **[X,T,θ,n]** **[)]**.

3. Adjust the window to correspond to the given domain.

Press **[WINDOW]**. Set $X_{\min}=0$, $X_{\max}=2\pi$, and $X_{\text{scl}}=\frac{\pi}{2}$. (Press **[2nd]** **[^]** to use **[π]**). These settings display the graph from 0 to 2π , using an interval of $\frac{\pi}{2}$ on the x-axis. In this case, set $Y_{\min}=-1$ and $Y_{\max}=1$, since the cosine function lies between these values. If this fact is not known, then omit this step. Note that the calculator displays the values in terms of π as decimals.

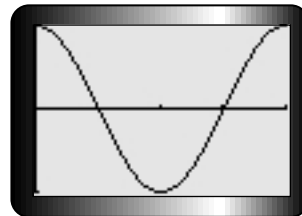


step 3

4. Graph the function using ZoomFit.

Press **[ZOOM]** **[0]**. The graph is displayed over the domain and the calculator determines the best values to use for $Y_{\max}$ and $Y_{\min}$ in the display window.

Note: You can use ZoomTrig (press **[ZOOM]** **[7]**) to graph the function in step 4. ZoomTrig will always display the graph in a window where $X_{\min}=-360^\circ$ (-2π), $X_{\max}=360^\circ$ (2π), $X_{\text{scl}}=90^\circ$ ($\frac{\pi}{2}$), $Y_{\min}=-4$, and $Y_{\max}=4$.



step 4

Practice 5.5

1. Graph each function using the specified domain and interval.

- $y = \sin x$, $0^\circ \leq x \leq 360^\circ$, x -interval = 45°
- $y = \cos x$, $0^\circ \leq x \leq 720^\circ$, x -interval = 90°
- $y = \tan x$, $0^\circ \leq x \leq 360^\circ$, x -interval = 90°
- $y = \sin x$, $-360^\circ \leq x \leq 360^\circ$, x -interval = 60°
- $y = \cos x$, $0 \leq x \leq 2\pi$, x -interval = $\frac{\pi}{2}$
- $y = \tan x$, $0 \leq x \leq 3\pi$, x -interval = $\frac{\pi}{4}$
- $y = \sin x$, $-2\pi \leq x \leq 2\pi$, x -interval = $\frac{\pi}{6}$
- $y = \sin x$, $-4\pi \leq x \leq 4\pi$, x -interval = π